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## **An integrated analysis of socioeconomic structures and actors in Indonesian industrial clusters**

Ismalina, Poppy

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## 4. Research Methodology

This chapter explains how and where the research study was carried out. After delineating the working definition of an industrial cluster, I describe the research site, fieldwork methods, and method for data analysis.

### 4.1 Definitions of Industrial Clusters and Firm Size in an Indonesian Context

To define *cluster* in the Indonesian context, this study refers to formal documents from Indonesia's government. Based on the Ministry of Industry's 2005 list of *Sentra Industri Kecil* (Small Industry Cluster) in Central Java and Yogyakarta, a small industry cluster is a group of at least 20 industrial enterprises, defined by the Ministry of Industry as small enterprises that produce similar goods and are located in a rural area or small town. Smaller clusters are registered if they have distinct export potential.

For the *firm size* there are several definitions of small and medium enterprises (SMEs), depending on which agency defines it. The State Ministry of Cooperative and Small and Medium Enterprises (Menekop & UKM) promulgated the Law on Small Enterprises Number 9 of 1995, which defines a small enterprise (SE) as a business unit with total initial assets of up to Rp 200 million (about €15,150 at the February 2010 exchange rate), not including land and buildings, or with an annual value of sales of a maximum of Rp 1 billion (€75,750), and a medium enterprise (ME) as a business unit with an annual value of sales of more than Rp 1 billion but less than Rp 50 billion (€3,790,000). The law does not explicitly define micro enterprises (MIEs). However, because MIEs are the smallest enterprise category, Menekop & UKM data on SEs include MIEs.

Biro Pusat Statistik (BPS; the Indonesian Central Bureau of Statistics), which regularly conducts surveys of SMEs, uses the number of workers as the basis for determining the size of an enterprise. In its definition, MIEs, SEs, and MEs are business units with, respectively, 1–4, 5–19, and 20–99 workers, and large enterprises (LEs) are units with 100 or more workers. MoI also defines

enterprises by size in its sector (industry manufacturing) according to the number of workers.

As a result, this study adopts the workforce criterion of the BPS to classify the firms on the basis of their size. This workforce criterion is useful because these data are readily available from the listing from the Ministry of Industry.

## 4.2 Research Site

Fieldwork was carried out in three Indonesian clusters. Using preliminary fieldwork (January–February 2006), for this study I selected three industrial clusters in Yogyakarta, Indonesia, as samples because Yogyakarta has a remarkable record in the presence of SMEs clusters. There, SME entrepreneurs have been recognized as one of the engines of growth: They are the business innovators who are crucial in moving a region into new products and markets and applying new technologies and management approaches. In addition, Yogyakarta has a long tradition of support for affirmative action programs that foster entrepreneur development.

The three Indonesian clusters in Yogyakarta are the Kotagede silver handicraft cluster, the Manding leather handicraft cluster, and the Kasongan ceramic handicraft cluster. These three examples capture the business development and sociocultural diversities of a cluster reasonably well. The total number of firm's population in Manding is 25 firms; there are about 400 firms in Kotagede, and 200 in Kasongan.

The silver handicraft Kotagede and the ceramic handicraft Kasongan clusters produce their goods for national as well as export markets. Interfirm linkages in the clusters are complex, and specific stages of the production process are frequently outsourced to specialist firms within the clusters. In Manding, some leather handicraft producers have started to influence the development trajectory of the clusters, and some enterprises produce for export through traders or wholesalers from outside the cluster. Thus, the Manding cluster is less developed compared with the Kotagede and Kasongan clusters.

According to Sandee and ter Wengel (2002), clusters in Indonesia can be classified into four types:

1. *Artisanal*: The cluster consists of mainly micro firms that have low productivity and wage, are local market oriented, use primitive or obsolete tools and equipment, are to a large degree illiterate and passive in marketing, rely heavily on the role of intermediaries/traders, and exhibit a low degree of interfirm specialization.
2. *Active*: The cluster includes many firms that use more skilled workers and better technology, supply national and export markets, are active in marketing, and make use of internal as well as external networks.
3. *Dynamic*: The firms in the cluster have intensive international trade networks; internal heterogeneity within a cluster in terms of size,

technology, and served market is more pronounced; and leading/pioneering firms play a decisive role.

4. *Advanced*: The cluster has a high degree of interfirm specialization and cooperation. Business networks among enterprises with raw material, component, equipment, and other input suppliers, providers of business services, traders, distributors, and banks are well developed. Cooperation with local, regional, or even national government as well as with specialized training and research institutions such as universities is good. Moreover, many firms are export oriented (mainly through trading houses or exporting companies).

I identified the Kotagede and Kasongan clusters as active and the Manding cluster as artisanal (not yet dynamic), considering the dynamics of interfirm relationships within the clusters that consist of labor division, market penetration, kinds of interfirm relationships, and the total number of participating firms, as explained in subsequent chapters. This is useful for the econometric models used in Chapter 6, in which the classifications of the sample clusters are treated as a dummy variable of the models. The dummy variable refers to the clusters that are classified as active clusters.

With respect to the sociocultural condition, most people who live in Kotagede acknowledge their modern Islamic upbringing. Some were educated in the modern Islamic school, and many of them have engaged in the activities of Muhammadiyah, one of Indonesia's largest modern Islamic organizations. Unlike people in Kotagede, the way of life of villagers in Manding and Kasongan is strongly influenced by the mix of the Javanese culture and the traditional Islamic values. In addition, Manding and Kasongan are located in a rural area, whereas Kotagede is in an urban area, implying that they have different social value systems. Moreover, because Kotagede is located nearby the center of the Yogyakarta province, many people who are from outside the province come and stay in this town. As a result, the way of life of Kotagede people is also affected by the interaction of the outsiders with their own culture.

Thus, Kasongan and Manding represent the rural setting cluster in which people live with a mix of the traditional Islamic and Javanese culture as their sociocultural identity, though the Manding cluster is less developed than the Kasongan cluster. In contrast, Kotagede represents the urban setting cluster, which has been developed like Kasongan, except that the social mores reflect their modern Islamic upbringing. However, according to Dei Ottati (2003b), because of its industrial specialization and the connected necessity of importing and exporting many different materials, the environment of the district is not as closed to the external world as a traditional community. In fact, although Kasongan and Manding are located in a rural area, the values of their communities are influenced by the mix of a rural-area tradition and industrial cluster features. Thus, the common culture of the communities of Kasongan and

Manding is not as traditional as the community of other rural areas that do not have industrial clusters.

The last reason for choosing the sample clusters is the ease of access to the sample regions. I did preliminary research in Kotagede and Manding at the end of 2006 and did some business consulting several years ago in the two clusters. Furthermore, accepting the notion that LEs and SEs are different, this study controls for firm size and included large, medium, and small firms in the sample. Firm selections for the pilot project were based on a stratified random sampling procedure in the two clusters (Kotagede and Manding).

### **4.3 Fieldwork Methods**

#### **4.3.1 *Four phases of the fieldwork***

This study employed the following methods to collect data between July 2007 and July 2008: physical site inspection (direct observation), in-depth interviews with the stakeholders of the clusters (leading local actors, owners, managers, and workers), participative observation at meetings of local business associations in the clusters (to identify local actors in the associations and the role of local associations for the cluster members), and a closed questionnaire for a complete survey. The qualitative techniques—in-depth interviews and participation observation—are suitable and applied to gain additional information on multiple linkages and the role of local business associations and local people, which was not obtained by the quantitative techniques.

For in-depth interviews, interviewees were selected through a purposive sampling strategy that consists of targeting people who are strategically important to the business development of a cluster through local business associations and the like. Producers, manufacturers, or other cluster communities (artisans, retailers, and suppliers) were also selected as informants to confirm the information obtained from one another. An in-depth interview brings out more sharply the qualitative analysis of this study. This approach is also useful to confirm all assumptions and the theoretical framework used in this study and put them into the practical perspective. Using the in-depth interview, I was able to check all assumptions of this study and write a realistic and accurate questionnaire for a large clustering survey.

I utilized a large clustering survey approach with a closed questionnaire, which was distributed within a cluster's community. I used the questionnaire to observe sample firms with respect to multiple linkages within a cluster, competitive behavior of local firms, and the properties of social embeddedness among clustered firms (trust and reciprocity). I explicitly considered social background because its relevance directly derives from its interconnection with the economic and institutional aspects of the clustering systems. The sample firms were randomly chosen in each subcluster, which consisted of manufacturers, retailers with their own workshop, and retailers who did not

have a workshop. To take different firm sizes into account, I stratified the sample firms by size.

The large clustering survey adds to the analysis of the in-depth interviews by providing a more comprehensive picture of the studied clusters. This clustering survey covers 210 firms in three sample clusters. This approach enabled me to test all hypotheses of this study by processing survey questionnaire data with an econometric model (The quantitative analysis is described in Section 4.4.2.)

The fieldwork was conducted in four phases, as seen in Table 4.1. In July–September 2007, I did an initial phase consisting of pilot interviews of ten subsamples of firms at Kotagede and Manding. I used the data to learn how the interview materials and a closed-questionnaire draft affected the accuracy of reporting. These data were used to make initial statements about the socioeconomic structure of the cluster business community and the role of influential actors within the clusters.

In October 2007–January 2008, I did the second phase of the fieldwork. This phase involved open-ended, moderately directive interviews and direct field observations in some firms in two sample clusters. These methods were advantageous for this study because they provided data for conducting a detailed analysis of the dynamics of multiple ties in the clusters. These methods also brought out more sharply the qualitative analysis of this study. I also conducted the first survey with a closed questionnaire in this phase. It covered 78 firms: 55 in Kotagede and 23 in Manding.

At the first step of this fieldwork, the format of many questions of the questionnaire was based on the five-point Likert response set; this measures the extent to which a person agrees or disagrees with the question (1 = “strongly disagree” to 5 = “strongly agree”). However, when I used this format, some respondents in the two clusters (Manding and Kotagede) had difficulty distinguishing among the five answers. For example, they asked what the difference between “strongly agree” and “agree” was when they agreed to the statement “The cluster gives the participating firms the benefits in the form of information and knowledge sharing.”

In addition, in their culture, they are not used to expressing their thoughts or feelings in strong wording. Emphasizing “very” or “strongly” for something that they feel means they exaggerate—something the Javanese culture does not emphasize. In addition, as many firms’ respondents have only elementary school education, they do not have the ability to interpret a complex question with complicated answer options. As a result, at the second step of the fieldwork, I changed the format of the questions of the questionnaire into yes or no questions.

In the third phase of the fieldwork (February–April 2008), an organized interpretation of the data developed. I developed a working framework based on extant theory and then traveled back and forth between the data and the working

framework. During May–July 2008, I carried out the fourth phase of the fieldwork, which included a large survey approach using a revised closed questionnaire for an additional 132 sample firms in the three clusters.

Therefore, the sample survey included 210 firms: 102 of them located in Kotagede, 23 firms in Manding, and 85 firms in Kasongan. The total number of firms in Kotagede is about 450; in Manding, about 30; and in Kasongan, about 200. Using their sales turnover per month as a measure, the total sample of this study is 94 MIEs, 93 SEs, 21 MEs, and 2 LEs. The sample of large firms is small because there are only few large firms in Kasongan and Kotagede, and there is no large firm in Manding.

To detect possible problems with nonresponse error, this study used two methods. First, according to the test for nonresponse bias by Armstrong and Overton (1977), country-specific t-tests between early and late respondents indicated no statistically significant differences. Second, I conducted a small survey of 15 (in Kotagede), 5 (in Manding), and 10 (in Kasongan) randomly selected nonrespondents to determine whether there were any systematic differences between the firm sample and the rest of the population in the three clusters. Using t-tests for differences in the means of respondent and nonrespondent firms on certain key variables, I found there were no statistically significant differences between them. Therefore, overall, nonresponse bias did not appear to be a problem in this study.

Table 4.1. Four Phases of the Fieldwork Study

	<i>Periods</i>	<i>Outcome</i>
<i>Preliminary Research</i>	January–March 2006	Identification of two research sample industrial clusters
<i>Phase 1</i>	July–September 2007	Pilot interviews and evaluations of pilot interviews
<i>Phase 2</i>	October 2007–January 2008	The first survey and participative observations at the meeting of local business associations
<i>Phase 3</i>	February–April 2008	Preliminary impressions and evaluations of the framework
<i>Phase 4</i>	May–July 2008	The second survey and participative observations at the meeting of local business associations

**4.3.2    *An investigation of the role of local actors in local business organizations***

To investigate the role of local actors in the cluster community, I started with their role in the local business organizations. From the pilot interviews



with some entrepreneurs in the studied clusters (July–September, 2007), I found that local people in the clusters acknowledged some persons as influential actors because they had a significant role in the decision-making process in local business associations at the cluster and/or sub-subcluster level. These leaders or influential actors were acknowledged not because of their personal traits or charisma or their religious or social status, but rather because of their influence in the decision making process in the local business associations.

In a cluster, local actors may emerge in processes of strategic decision making in local business organizations (Nadvi, 1997). Processes by which such decisions are made become vehicles for individual people and groups to shape clustering organizational strategies. Such actors refer to the creation of an overall sense of purpose and direction that guides integrated strategy formulation and implementation in local business organizations within a cluster.

As a consequence, this study adopts Freeman et al.'s (1963) approach in locating leaders in local communities with some adjustments on the basis of the context of a cluster's community. As Freeman et al. explain, any study must involve a detailed examination of the whole decision-making process as it is exhibited over a range of issues within the cluster community. As a result, I decided to investigate the role of local actors in the decision-making process in some local business associations to identify the role of local actors within a cluster. According to Freeman et al (1963, p. 792), "active participation in decision making is leadership." Therefore, I conducted participative observations at the meetings of local business associations in the clusters at least three times for one local association.

In addition, this investigation specifies a range of issues, the person involved, their intentions, and the extent and nature of their influence. To achieve a workable research design for this step, there are three assumptions. First, persons who are categorized as influential local actors are active participants in decision making in the local associations. Thus, identifying the active participants in the decision-making process indicates the influence of the actor.

Second, I assumed that the role of local actors is a necessary consequence of social participation. In this case, I reasoned that local actors within a cluster result from a high degree of voluntary activity in cluster community affairs. Social participation might occur at the local institutions within a cluster because members of the institutions in a cluster are connected socially. The social-participation approach is thus complementary to the first assumption; whereas the first involves only the formal authority, this third assumption stresses a social participation of local actors within a cluster.

Finally, I assumed that influential actors in a cluster cannot be listed directly through the meetings of local institutions. As a result, I assessed the reputation of influential actors by turning to informants from the cluster community itself. The list of influential actors at the local institutions meetings



had to be confirmed by the cluster's community using a closed questionnaire. I chose the informant sample randomly. To take into account informants of different segments in a cluster, I stratified the sample by informant status in cluster organization: owner of the firms, managers, and workers (employees).

The approach of participative observation is as follows:

1. Come and participate at least three times at the monthly meeting of local business associations at the clusters.
2. See, take notes on, and record a discussion during the first observation.
3. Ask the meeting participants to make a list of influential persons at the decision-making process of the association at the second observation. Explain to them that the list may include persons who hold formal authority or those who do not, as long as the persons often have initiatives, influence the decisions made at the association meetings, and participate actively at the association's activity.
4. Tabulate nominations; a person who is identified by at least four participants should be listed.
5. At the third observation, using the list of influential persons based on the participant's perception at the second meeting, confirm the role of identified influential persons and find the reasons they are selected as influential persons by the members of the associations.

#### **4.4 Data Analysis**

The data analysis mainly involves processing the data collected through a large clustering survey, in-depth interviews, participative observations, and secondary data. The respondents of a clustering survey are different from the respondents of in-depth interviews. The total survey respondents number 210 individual firms, and the total interview respondents number 41 people. I conducted participative observations at the seven local monthly business associations in the clusters, three times for each association.

To verify the data that were obtained in the survey and interviews, I also referred to both respondents' financial reports/notes and local associations' activity reports; I integrated the main findings of these secondary data into the analysis. The secondary data from individual firms included turnover per month, percentage of total products that are exported, total number of workers (artisans and nonartisans), total five-year investment, one-year net profit, five-year net profit trends, and five-year business trends.

##### **4.4.1 Qualitative analysis**

I used a qualitative analysis to process data from the in-depth interviews and participative observations at the local business association meetings in the clusters. There are two kinds of in-depth interviews conducted in this study: (1) individual interviews with manufacturers-artisans, retailers, suppliers, artisan

workers, nonartisan workers, and government agencies; and (2) interviews with the influential local actors identified through participative observations as well as the survey. The interviews covered 29 representatives of cluster communities and local government officials and 12 local actors.

Both kinds of interviews were recorded on tape and were fully transcribed. The participative observations were also fully transcribed. All interviews are integrated in the analysis of multiple linkages, firm performance, the simultaneity of market relations and social embeddedness, and the role of local business associations and local actors. Chapter 5 combines qualitative and quantitative analysis (statistic descriptive), while chapters 7 and 8 focus on the discussions of qualitative evidence.

#### **4.4.2 *Quantitative analysis***

The purpose of the quantitative analysis is to process survey questionnaire data with descriptive statistics and econometric models. Chapter 5 presents the results and discussion of descriptive statistics. In chapter 6, I used econometric models in this study to test the impact of socioeconomic structures of a cluster (the simultaneity market relations and social embeddedness) on three indicators of firm performance. The models test the relationships, measurement, and hypothesis (see Chapter 6 for more details).

